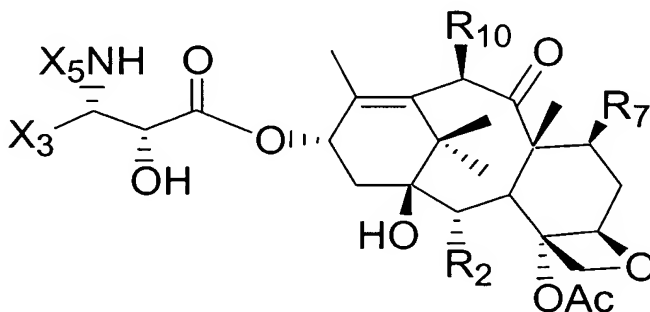


Claims

1. A method of inhibiting tumor growth in a mammal, said method comprising orally administering a therapeutically effective amount of a composition comprising at least one pharmaceutically acceptable carrier and a taxane having the formula



5 wherein

X<sub>3</sub> is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, isopropyl, isobutenyl, cyclopropyl, cyclobutyl or cyclopentyl;

X<sub>5</sub> is -COX<sub>10</sub> and X<sub>10</sub> is 2-furyl, 2-thienyl, 3-pyridyl, 4-pyridyl, n-propyl, isobutyl, butenyl or isobutenyl or X<sub>5</sub> is -COOX<sub>10</sub> and X<sub>10</sub> is ethyl, n-propyl, isopropyl or isobutyl;

10 R<sub>2</sub> is benzoyloxy;

R<sub>7</sub> is R<sub>7a</sub>COO-;

R<sub>10</sub> is hydroxy; and

R<sub>7a</sub> is heterosubstituted methyl.

2. The method of claim 1 wherein X<sub>3</sub> is 2-thienyl or 3-thienyl.

3. The method of claim 1 wherein X<sub>3</sub> is 2-furyl or 3-furyl.

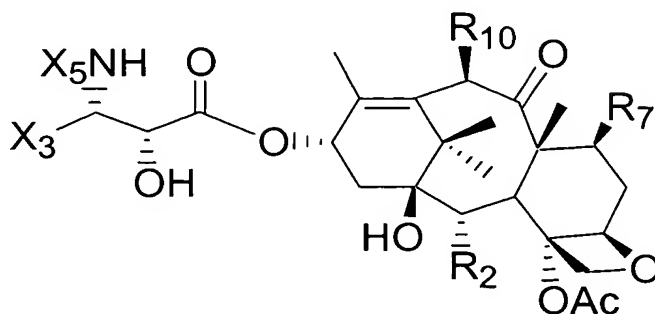
4. The method of claim 1 wherein R<sub>7a</sub> is acetoxymethyl, methoxymethyl, phenoxymethyl, ethoxymethyl or methylthiomethyl.

5. The method of claim 4 wherein X<sub>3</sub> is 2-furyl or 3-furyl.

6. The method of claim 4 wherein X<sub>3</sub> is 2-thienyl or 3-thienyl.

7. A method of inhibiting tumor growth in a mammal, said method comprising orally administering a therapeutically effective amount of a composition comprising

at least one pharmaceutically acceptable carrier and a taxane having the formula



5 wherein

$X_3$  is 2-furyl or 2-thienyl;

$X_5$  is  $-\text{COOX}_{10}$  and  $X_{10}$  is t-amyl;

$R_2$  is benzoyloxy;

$R_7$  is  $R_{7a}\text{COO}-$ ;

10  $R_{10}$  is hydroxy; and

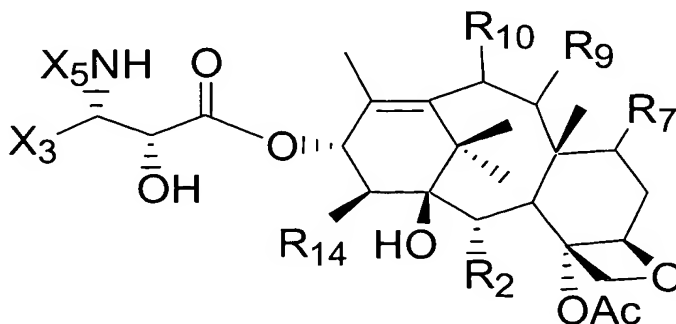
$R_{7a}$  is methoxymethyl or acetoxymethyl.

8. The method of claim 7 wherein  $R_{7a}$  is methoxymethyl.

9. The method of claim 7 wherein  $X_3$  is 2-furyl.

10. The method of claim 7 wherein  $X_3$  is 2-thienyl.

11. A method for preparing a pharmaceutical composition comprising mixing at least one nonaqueous, pharmaceutically acceptable solvent and a taxane having the formula



wherein

5  $R_2$  is acyloxy;

10         $R_7$  is heterosubstituted acetate;  
          $R_9$  is keto, hydroxy, or acyloxy;  
          $R_{10}$  is hydroxy;  
          $R_{14}$  is hydrido or hydroxy;  
          $X_3$  is substituted or unsubstituted alkyl, alkenyl, alkynyl or heterocyclo;  
          $X_5$  is  $-\text{COX}_{10}$ ,  $-\text{COOX}_{10}$ , or  $-\text{CONHX}_{10}$ ;  
          $X_{10}$  is hydrocarbyl, substituted hydrocarbyl, or heterocyclo; and  
         Ac is acetyl.

12. The method of claim 11 wherein  $X_3$  is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl,  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl.

13. The method of claim 11 wherein  $R_7$  is  $R_{7a}\text{COO}-$  and  $R_{7a}$  is a heterosubstituted methyl wherein the heteroatom is substituted to form a heterocyclo, alkoxy, alkenoxy, alkynoxy, aryloxy, hydroxy, protected hydroxy, oxy, acyloxy, nitro, amino, amido, thiol, ketal, acetal, ester or ether.

14. The method of claim 11 wherein  $X_5$  is  $-\text{COX}_{10}$  and  $X_{10}$  is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl,  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl, or  $X_5$  is  $-\text{COOX}_{10}$  and  $X_{10}$  is substituted or unsubstituted  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl.

5        15. The method of claim 11 wherein  $X_3$  is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl,  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl,  $R_7$  is  $R_{7a}\text{COO}-$  and  $R_{7a}$  is a heterosubstituted methyl wherein the heteroatom is substituted to form a heterocyclo, alkoxy, alkenoxy, alkynoxy, aryloxy, hydroxy, protected hydroxy, oxy, acyloxy, nitro, amino, amido, thiol, ketal, acetal, ester or ether.

5        16. The method of claim 11 wherein  $X_3$  is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl,  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl,  $X_5$  is  $-\text{COX}_{10}$  and  $X_{10}$  is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl,  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl, or  $X_5$  is  $-\text{COOX}_{10}$  and  $X_{10}$  is substituted or unsubstituted  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl.

17. The method of claim 11 wherein  $R_7$  is  $R_{7a}COO^-$ ,  $R_{7a}$  is a heterosubstituted methyl wherein the heteroatom is substituted to form a heterocyclo, alkoxy, alkenoxy, alkynoxy, aryloxy, hydroxy, protected hydroxy, oxy, acyloxy, nitro, amino, amido, thiol, ketal, acetal, ester or ether,  $X_5$  is  $-COX_{10}$  and  $X_{10}$  is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl,  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl, or  $X_5$  is  $-COOX_{10}$  and  $X_{10}$  is substituted or unsubstituted  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl.

18. The method of claim 11 wherein  $X_3$  is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl,  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl,  $R_7$  is  $R_{7a}COO^-$ ,  $R_{7a}$  is a heterosubstituted methyl wherein the heteroatom is substituted to form a heterocyclo, alkoxy, alkenoxy, alkynoxy, aryloxy, hydroxy, protected hydroxy, oxy, acyloxy, nitro, amino, amido, thiol, ketal, acetal, ester or ether,  $X_5$  is  $-COX_{10}$  and  $X_{10}$  is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl,  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl, or  $X_5$  is  $-COOX_{10}$  and  $X_{10}$  is substituted or unsubstituted  $C_1 - C_8$  alkyl,  $C_2 - C_8$  alkenyl, or  $C_2 - C_8$  alkynyl.

19. The method of claim 13 wherein  $X_3$  is 2-furyl, 3-furyl, 2-thienyl or 3-thienyl.

20. The method of claim 14 wherein  $X_3$  is 2-furyl, 3-furyl, 2-thienyl or 3-thienyl.

21. The method of claim 19 wherein  $R_7$  is  $R_{7a}COO^-$  and  $R_{7a}$  is a heterosubstituted methyl wherein the heteroatom is substituted to form an alkoxy or acyloxy.